D. R. Madison (Dennis)
Vice President - Hatch

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SOUTHERN COMPANY
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January 13, 2009

Docket No.: 50-321

NL-09-0028

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Edwin I. Hatch Nuclear Plant – Unit 1
Licensee Event Report
Power Supply Card Failure Causes Loss of Feedwater Flow
Resulting in Manual Reactor Scram

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73 (a)(2)(iv)(A), Southern Nuclear Operating Company is submitting the enclosed report for a condition that occurred on November 22, 2008.

This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,

Dennis Madison

D. R. Madison
Vice President – Hatch

DRM/MJK/daj

Enclosure: LER 1-2008-004

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. D. H. Jones, Vice President – Engineering
RTYPE: CHA02.004

U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Hatch
Mr. J. A. Hickey, Senior Resident Inspector – Hatch

NRC FORM 366 (9-2007)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE
Power Supply Card Failure Causes Loss of Feedwater Flow Resulting in Manual Reactor Scram

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER 05000
11	22	2008	2008	004	0	01	13	2009	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
99.8	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Edwin I. Hatch / Kathy Underwood, Performance Improvement Supervisor	912-537-5931

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	SD	JX	Y006	Y					

14. SUPPLEMENTAL REPORT EXPECTED		15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)*	☒ NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On November 22, 2008 at approximately 1019 EST, Unit 1 was in the Run mode at a power level of approximately 2800 CMWT, 99.8 percent rated thermal power. A manual scram was inserted due to Reactor Water Level (RWL) decreasing to 10 inches above instrument zero and continuing to decrease. High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) automatically started on low RWL, Level 2. RWL decreased to approximately negative 68 inches (about 90 inches above the top of active fuel) prior to it being recovered by HPCI and RCIC operation. Due to the RWL reaching the Anticipated Transient Without Scram – Recirculation Pump Trip (ATWS-RPT) low level, the recirculation pumps tripped as designed. As RWL was recovering, HPCI was manually secured and RCIC flow was decreased. The 1A Reactor Feed Pump (RFP) was subsequently restarted and RWL control was then transitioned to the 1A RFP.

Investigation determined that the direct cause of the event was failure of DC power supply 1N21-K088 which provides power to the differential pressure (DP) controller for the (Steam Jet Air Ejector) SJAE Intercondenser Cooling water control valve 1N21-F211.

The DC power supply 1N21-K088 was replaced and a repetitive task has been created to replace the component at a prescribed interval.

NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor
Energy Industry Identification System codes appear in the text as (EIIS Code XX).

DESCRIPTION OF EVENT

On November 22, 2008 at approximately 1019 EST, Unit 1 was in the Run mode at a power level of approximately 2800 CMWT, 99.8 percent rated thermal power. A manual scram was inserted due to Reactor Water Level (RWL) decreasing to 10 inches above instrument zero and continuing to decrease. Prior to this, the Condensate Booster Pumps (CBP) (EIIS Code SD) and the Reactor Feed Pumps (RFP) (EIIS Code SJ) low suction pressure alarms were received. A Recirculation Pump (EIIS Code AD) runback to 61% speed was initiated by design due to the low suction pressure condition. Reactor operators responded to the transient by manually reducing recirculation flow further. A System Operator was dispatched to the Condensate Demineralizer (EIIS Code SD) panel. The System Operator observed demineralizer flows oscillating between 0 and 1200 gpm and the demineralizer system DP at approximately 17 psid.

CBP discharge pressure increased momentarily with the initial reduction in recirculation flow and then began decreasing again. The 1A CBP tripped and was followed by the tripping of the 1A and 1B RFP's. At that time, a manual scram was inserted. Reactor Water Level continued to decrease with High Pressure Coolant Injection (HPCI) (EIIS Code BJ) and Reactor Core Isolation Cooling (RCIC) (EIIS Code BN) automatically starting on low RWL, Level 2. RWL decreased to approximately negative 68 inches (68 inches below instrument zero or about 90 inches above the top of active fuel) prior to it being recovered by HPCI and RCIC operation. The peak reactor pressure reached was approximately 1053 psig, which is below the setpoint of 1150 psig for the actuation of the Safety Relief Valves (EIIS Code SB). Due to the RWL reaching the Anticipated Transient Without Scram – Recirculation Pump Trip (ATWS-RPT) low level, the recirculation pumps tripped as designed.

As RWL was recovering, HPCI was manually secured and RCIC flow was decreased to 270 gpm. RWL continued to increase and the RWL high level trip, Level 8, was then received due to level swell and RCIC operation. The high level trip resulted in a trip of RCIC. As RWL decreased due to steaming from decay heat, RCIC was manually initiated for RWL control. The 1A RFP was subsequently restarted and RWL control was then transitioned to the 1A RFP.

CAUSE OF EVENT

Investigations determined that the direct cause of the event was failure of DC power supply 1N21-K088. This power supply provides control power for DP control for the SJAE Intercondenser Cooling water control valve 1N21-F211. This valve is on the primary condensate 30-inch line and controls Dp by being throttled closed. With the failure of the power supply, the valve failed closed isolating the main condensate 30-inch line to the Condensate Demineralizer, thereby creating a backpressure and forcing cooling water through a 12-inch line to the SJAE. The 12-inch SJAE cooler supply line did not have adequate capacity for the 3-2-2 alignment of the Condensate, CBP, and RFP's, resulting in low suction pressure trips for the 1A CBP and the 1A and 1B RFP's.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This report is required by 10 CFR 50.73 (a)(2)(iv)(A), actuation of the Reactor Protection System (RPS) (EIIS Code JC) including: reactor scram or reactor trip. Specifically, the manual insertion of a reactor scram based on RWL decreasing to 10 inches above instrument zero and continuing to decrease.

Prior to this event, the Condensate Booster Pumps (CBP) and the Reactor Feed Pumps (RFP) low suction pressure alarms were received. The 'A' Recirculation Pump runback to 61% speed was initiated due to the low suction pressure condition. CBP discharge pressure increased momentarily with the reduction in recirculation flow and then began decreasing again. The 1A CBP tripped followed by the 1A and 1B RFP's tripping. At that time, a manual scram was inserted. Reactor Water Level continued to decrease with High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) automatically starting on low RWL, Level 2. RWL decreased to approximately negative 68 inches (68 inches below instrument zero or about 90 inches above the top of active fuel) prior to it being recovered by HPCI and RCIC operation. The RFP's were available immediately following the manual scram to maintain level but were not immediately used. Reactor pressure reached a pressure of approximately 1053 psig which is below the setpoint of 1150 psig for the actuation of the Safety Relief Valves. Due to the RWL reaching the Anticipated Transient Without Scram – Recirculation Pump Trip (ATWS-RPT) low level, the recirculation pumps tripped as designed.

As RWL was recovering, HPCI was manually secured and RCIC flow was decreased to 270 gpm. RWL continued to increase and the RWL high level trip, Level 8, was then received due to level swell and RCIC operation. The high level trip resulted in a trip of RCIC. As RWL decreased due to steaming from decay heat, RCIC was manually initiated for RWL control. The 1A RFP was subsequently restarted and RWL control was then transitioned to the 1A RFP.

All systems functioned as expected and per their design given the water level transient. Water level was maintained well above the top of the active fuel throughout the transient and was restored to its desired value. Therefore, it is concluded the event had no adverse impact on nuclear safety. This analysis is applicable to all power levels.

CORRECTIVE ACTIONS

DC power supply 1N21-K088 was replaced.

A repetitive task for replacement of the 1N21-K088 DC power supply card has been created.

Any additional corrective actions that are determined to be appropriate as a result of the cause investigation will be tracked in the plant's corrective action program.

ADDITIONAL INFORMATION

Other Systems Affected: No systems other than those already mentioned in this report were affected by this event.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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Failed Components Information:

Master Parts List Number: 1N21-K088
Manufacturer: Yokogawa (Y006)
Model Number: WA1V
Type: Circuit Board

EIIS System Code: SD
Reportable to EPIX: Yes
Root Cause Code: X
EIIS Component Code: JX

Commitment Information: This report does not create any permanent licensing commitments.

A previous similar event in the last two years in which the reactor scrammed due to low feedwater flow due to an equipment failure was reported in the following Licensee Event Report:

LER 2-2007-008 identified an instance where a partial loss of the Condensate System caused low feedwater flow resulting in a Reactor Protection System (RPS) actuation on Low Reactor Water Level. The root cause of that event was determined to be ineffective execution of a screening procedure written to determine scram/transient potential of I&C activities. The procedures revised to correct this event were related to I&C activities and were not required to be used during this event. Therefore the corrective actions taken for that event would not prevent the occurrence of this event.